REMARKS

21. (currently amended) Processing apparatus adapted to implement an artificial intelligence application, which application requires use of training sets having positive and negative examples, the apparatus comprising:

- at least one memory adapted to store data and/or instructions;
- at least one processor adapted to execute ~~the following~~ operations, using the at least one memory, the operations comprising:
  - recognizing and maintaining a set of positive examples for training; and
  - selecting a set of negative examples for training, responsive to the positive examples, wherein no member of the set of negative examples appears twice.

22. (original) The apparatus of claim 21, wherein the artificial intelligence application is a content recommender.

23. (original) The apparatus of claim 22, wherein the content recommender recommends television shows.

24. (currently amended) Apparatus adapted to implement an artificial intelligence application, which application requires use of training sets having positive and negative examples, the positive and negative examples being describable in accordance with at least one feature, the feature having a plurality of possible values within a feature space, the apparatus comprising:

- at least one memory adapted to store data and/or instructions;

- at least one processor adapted to execute ~~the following~~ operations, using the at least one memory, the operations comprising:
  - recognizing and maintaining a set of positive examples for training, the set of positive examples including at least one subset, each subset including a plurality of members sharing a same respective value of a given feature in the feature space, the given feature being one that has been determined in advance to be a dominant feature in the feature space; and
  - selecting a set of negative examples for training, the set of negative examples including at least one respective subset of negative examples, the members of the respective subset of negative examples being selected to have a value of the given feature that is approximately adjacent to same respective value.

25. (previously presented) The apparatus of claim 24, wherein the given feature is time of day, and adjacent means either within an hour before or within an hour after.

26. (previously presented)The apparatus of claim 24, wherein each respective subset of negative examples corresponds with a respective one of the at least one subset of positive examples, so that its respective value of the given feature is adjacent to the same respective value of the corresponding subset.

27. (new) A method for selecting negative examples for use in an artificial intelligence application, the method comprising executing operations on at least one data processing device, the operations comprising:

- selecting a set of positive examples that satisfy at least one desired external criterion;
- upon completion of the selecting of the positive examples and responsive thereto, selecting a set of negative examples.

28. (new) A method of training an artificial intelligence application, the method comprising executing operations in at least one data processing device, the operations comprising:

- selecting negative examples in accordance with the method of claim 27; and
- training the artificial intelligence application using the negative examples.

29. (new) The method of claim 27, wherein:

- the operations further comprise, upon completion of selecting the positive examples, determining a particular value of a given feature in feature space, which particular value appears to characterize a significant subset of the positive examples; and
- the selecting of the set of negative examples is such that a significant subset of the negative examples has a selected value responsive to the particular value of the given feature in feature space.

30. (new) The method of claim 29, wherein the selected value is the same as the particular value.

31. (new) The method of claim 29, wherein the selected value lies in a selected range around the particular value in feature space, but is not the same as the particular value.

32. (new) A method of training an artificial intelligence application, the method comprising executing operations in at least one data processing device, the operations comprising:

- selecting negative examples in accordance with the method of claim 29; and
- training the artificial intelligence application using the negative examples.

33. (new) The method of claim 29, wherein the artificial intelligence application recommends content.

34. (new) A medium readable by at least one data processing device and embodying code for causing the data processing device to execute operations, the operations comprising:

- selecting a set of positive examples that satisfy at least one desired external criterion; and
- upon completion of the selecting of the positive examples and responsive thereto, selecting a set of negative examples.

35. (new) The medium of claim 34, wherein:

- the operations further comprise, upon completion of selecting the positive examples, determining a particular value of a given feature in feature space, which particular value appears to characterize a significant subset of the positive examples; and
- the selecting of the set of negative examples is such that a significant subset of the negative examples has a selected value responsive to the particular value of the given feature in feature space.

36. (new) The method of claim 35, wherein the selected value is the same as the particular value.

37. (new) The method of claim 35, wherein the selected value lies in a selected range around the

particular value in feature space, but is not the same as the particular value.

38. (new) The medium of claim 35, wherein the operations further comprise training an artificial intelligence application using the positive and negative examples.

39. (new) The medium of claim 38, wherein the operations further comprise running the artificial intelligence application to give a solution to a real external problem.

40. (new) The medium of claim 39, wherein the solution is a content recommendation.

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Claims 1, 10, 16, 21, and 24 have been amended to make clear that the listed operations are not exclusive, that the processor could execute other operations. This is not a narrowing amendment, but rather a broadening amendment, and is not responsive to the rejections.

New claims 27-43 are method and medium claims whose limitations are analogous to those discussed below with respect to the existing apparatus claims.

Art rejections

The art rejections are respectfully traversed.

Since the references are many and complex, Applicants will confine their remarks to those portions of the references cited by the Examiner, except as otherwise indicated. Applicants make no representation as to the contents of other portions of the references.

The Examiner's other rejections and/or points of argument not addressed would appear to be moot in view of the following. Nevertheless, Applicants reserve the right to respond to those rejections and arguments and to advance additional arguments at a later date. No arguments are waived and none of the Examiner's statements are conceded.

Claim 1 & 21

Claim 1 recites recognizing and maintaining a set of positive examples for training. Upon *completion* of recognizing the set of positive examples, a set of negative examples is selected. The selection of negative examples is responsive to the set of positive examples.

Applicants respectfully submit that the Examiner has failed to indicate where the reference allegedly teaches or suggests these limitations. The Examiner cites only places where

the reference refers to positive and negative examples. Applicants do not find any indication in the portions of the reference cited by the Examiner that the negative examples are only selected upon recognition of and responsive to the positive examples. The sequencing and responsiveness of the selection of negative examples appear to be absent from the cited reference so far as Applicants can tell.

Applicants also respectfully submit that the Examiner's application of section 102 (e) is not correct. The sole inventor listed in the reference is also an inventor in the present application. This places the burden of proof on the Examiner to show that this is a reference, not upon the Applicants to prove that it is not a reference.

Applicants accordingly respectfully submit that the Examiner has failed to make a *prima facie* case against claim 1.

Claim 21 similarly recites the responsiveness and sequencing of the selection of negative examples and is therefore patentable for analogous reasons.

Claim 21 further recites that no member of the set of negative examples appears twice. Against this recitation, the Examiner makes a string of speculative reasoning. For instance, the Examiner assumes that there must be some time period during which the same program does not appear twice. Applicants respectfully submit that this is a very speculative assumption. With the proliferation of cable channels, there is no guarantee that the same program does not appear twice in the same time period. Applicants respectfully submit that the reference fails to teach or suggest that no negative example appears twice and that the Examiner's conclusions to the contrary constitute impermissible hindsight in light of Applicants' disclosure.

REMARKS

Claims 5, 10, and 16

Applicants respectfully submit that in making this rejection the Examiner paraphrases the claims in such a way as to mischaracterize them. This group of claims does not merely recite that the positive and negative examples contain subsets. The claims also do not merely recite that there are features in the examples that have values. The claims recite that the examples in the subsets of negative examples must have a particular feature value: that is, for claims 5 and 10, they must have the same respective value of a given feature as examples in a corresponding subset of the positive examples — and for claim 16 the feature value must be in a given range. The given feature is one that has been determined to be dominant.

In rejecting this group of claims, the Examiner does not appear to notice all of the limitations of the claims. He cites portions of the reference that merely state that the positive and negative examples have features with values and that the examples have subsets. He fails to establish that the reference teaches or suggests that the negative examples have subsets that meet the limitations of the claims. Applicants respectfully submit that the Examiner has therefore failed to make a *prima facie* case against this group of claims.

Applicants wonder if the Examiner even understands these claims. To clarify the meaning of the claims, Applicants will now give an example.

Let us suppose the artificial intelligence application is a television recommender and the given feature that has been determined to be dominant is time of day. Let us further suppose that the user works during the day, and is therefore not home to watch TV. In this case, all of the shows that occur during the work day will probably not be watched, and will therefore be candidates for negative examples. However, the fact that they are not watched probably only has time significance, not content significance, because the user might have been very interested in

those shows, but just could *not* watch them due to time constraints. By contrast, the not-watched shows that occurred at the same time that the user was watching a given show *have* content significance. The user made a choice to watch one over the other during a time period when he or she was watching TV. Therefore, it would not be very helpful to choose negative examples during time periods when the user never watches; while it would be helpful to choose negative examples from time periods when the user does watch. Thus, the recommender should choose negative examples responsive to the positive examples, by choosing not-watched shows that are at or near the same time as shows that the user did watch.

Sometimes, the shows that are in a nearby time slot to those watched will be even more significant than those in the same time slot, because the user may not be able to easily watch more than one show at a time – hence claims 6, 13, & 16.

The reference does not teach or suggest that the negative examples are chosen responsive to the positive examples; and, especially, does not teach or suggest that the negative examples share a feature value with the positive examples.

Claim 2

This claim recites that the set of negative examples has the same number of members as the set of positive examples.

Against this recitation, the Examiner cites Alexander. The portion of Alexander — which is a long & complex reference — cited by the Examiner teaches storing programs switched from and programs switched to. However, it is not clear that the channel switched from is a more negative example than the channel switched to. A person might switch back and forth between two channels and watch pieces of both programs. A channel switched from may well

be a positive example, especially if the viewer watched it for any length of time. A negative example would be a program not watched at all. Moreover, even if switched from programs were negative examples, they are not collected upon completion of the selection of positive examples, nor are they responsive to positive examples.

Applicants respectfully submit that the Examiner has therefore failed to make a *prima facie* case against claim 2.

Claims 6, 13

Claim 6 recites that the second subset of negative examples has a value of the given feature that lies within a predetermined range of the same value, but excluding the same respective value.

Against this the Examiner cites Bedard. Applicants respectfully submit that the Examiner mischaracterizes the claims in applying this reference. The Examiner characterizes Bedard as follows: "Bedard discloses a content recommender, which contains subsets corresponding to various genres." What does this have to with the claim recitations? Various genres do not constitute a range that values can lie within. Only numeric values have ranges. Genres like "sports," "comedy," and "action" do not have ranges. The genre feature value "sports" cannot be within a range of the genre feature value "comedy."

Moreover, Applicants are unable to find that the reference says anything about selecting negative examples at all.

Applicants accordingly respectfully submit that the Examiner has failed to make a *prima facie* case against claim 6.

Claim 13 is analogous to claim 6 with respect to the limitations discussed above.

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Claims 7, 14, and 19

Applicants respectfully submit that this rejection is based on speculation about what might happen "if" a given program is only shown once over a give time period. Applicants respectfully submit that the rejection fails to locate any basis for this speculation and that it comes only from impermissible hindsight in light of Applicants disclosure.

Claims 24, 25, and 26

These claims relate to selection of positive and negative examples for training of an artificial intelligence application.

Applicants respectfully submit that the rejection of these claims repeats the mischaracterization of Alexander as containing positive and negative examples. As stated before, a switched from station is not necessarily a negative example.

The sections of Herz referred to by the Examiner appear not to relate to training, but rather to running the application using an agreement matrix. Moreover, there does not appear to be any teaching or suggestion in the cited portions of how positive and negative examples might be selected.

Applicants accordingly respectfully submit that the Examiner has failed to make a *prima facie* case against this group of claims.

With respect to claim 25, the Examiner says that "the degree of correlation could very well be a program within an hour before or after." Applicants respectfully submit that this is impermissible hindsight reasoning and speculation in light of Applicants' disclosure and not a teaching or suggestion out of the references.

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Please charge any fees other than the issue fee to deposit account 14-1270. Please credit any overpayments to the same account.

Applicants respectfully submit that they have addressed each issue raised by the Examiner and that the application is accordingly in condition for allowance. Allowance is therefore respectfully requested.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited this date with the United States Postal Service as first class mail in an envelope addressed to

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Alexandria VA 22313-1450

On 3/24/05 (date)
By O/Barschall (signature)

Respectfully submitted,

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